The State Of Texting To 9-1-1

Intrado Inc.

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Agenda

- Current deployments of text to 9-1-1
- What is delaying deployments of text to 9-1-1
- An evolutionary path to deploy text to 9-1-1
- What the FCC can do to help

Current Deployments

- GSM Live Trial in Black Hawk County, Iowa
  - Using Customer Provided Location to route
  - Utilizing one GSM Carrier
  - Direct native IP routing to text enabled CPE PSAP
- CDMA Live Trial in Durham County, NC
  - Using automatic Cell ID location to route
  - Utilizing one CDMA carrier
  - Direct native IP routing to text enabled CPE PSAP

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What Is Delaying Deployments

- The “Chicken and the Egg” dilemma
  - Carriers are reluctant to deploy if only one or two PSAPs can receive their customers 9-1-1 text messages because of confusion to their customers
  - PSAPS are reluctant to deploy if most of the carriers are not routing 9-1-1 text messages because of confusion to their population
  - NG9-1-1 and RTT do not solve this dilemma
- Carrier concern about a possible text to 9-1-1 mandate that would require major changes to legacy SMS networks as the Phase II mandate did with wireless voice 9-1-1
- Uncertainty on future direction of text to 9-1-1 - multiple different technical options
- Desire for clarity that text to 9-1-1 is covered by liability protection statutes

An Evolutionary Path Deploy Text To 9-1-1

- 9-1-1 is our national emergency number and should be used by text requests for emergency assistance
- The 9-1-1 system can not be transformed overnight; a transitional approach needs to be taken to move text to 9-1-1 forward
- The hearing and speech disabled communities are the most in need of text to 9-1-1
- Commercial SMS is a reliable technology that is here today and is used extensively by the hearing and speech disabled communities
- The reliability of SMS for 9-1-1 can be enhanced with existing commercial standards and special configurations
- Cell ID location is necessary and also sufficient to determine the proper PSAP to which to route a text to 9-1-1 request for assistance
- Idle mode cell ID location is available today on GSM and CDMA networks with existing systems and standards

An Evolutionary Path Deploy Text To 9-1-1

- Stage 1 - Relay center for hearing and speech disabled communities
  - Pre-Registered hearing and speech disabled users texts to 9-1-1 using SMS
  - Only supports hearing and speech disabled customers that pre-register
  - All PSAPs supported
  - Route to PSAP using native 9-1-1 voice network
  - User commercial Idle mode cell location to automatically determine appropriate PSAP
  - Use 9-1-1 message center concept to provide 9-1-1 level of reliability for SMS to solve issues pointed out by 4G Americas paper
  - Deployable on Carrier by Carrier basis
- Stage 2 - Native routing to text enabled PSAP with Cell ID Location
  - Built on top of Stage 1
  - Would support all emergency text request for assistance for deployed carriers within the PSAP's geographic boundaries
  - Relay Center bypassed for PSAPs that are text enabled
- Stage 3 - 4G Deployments of RTT to PSAPs with X/Y location
  - Built on top of Stage 1 and Stage 2
  - Any customer with capable phone texts to 9-1-1 using RTT
  - Would support RTT delivery from 4G users to Text enabled PSAPs with callers X/Y location and Cell ID Location

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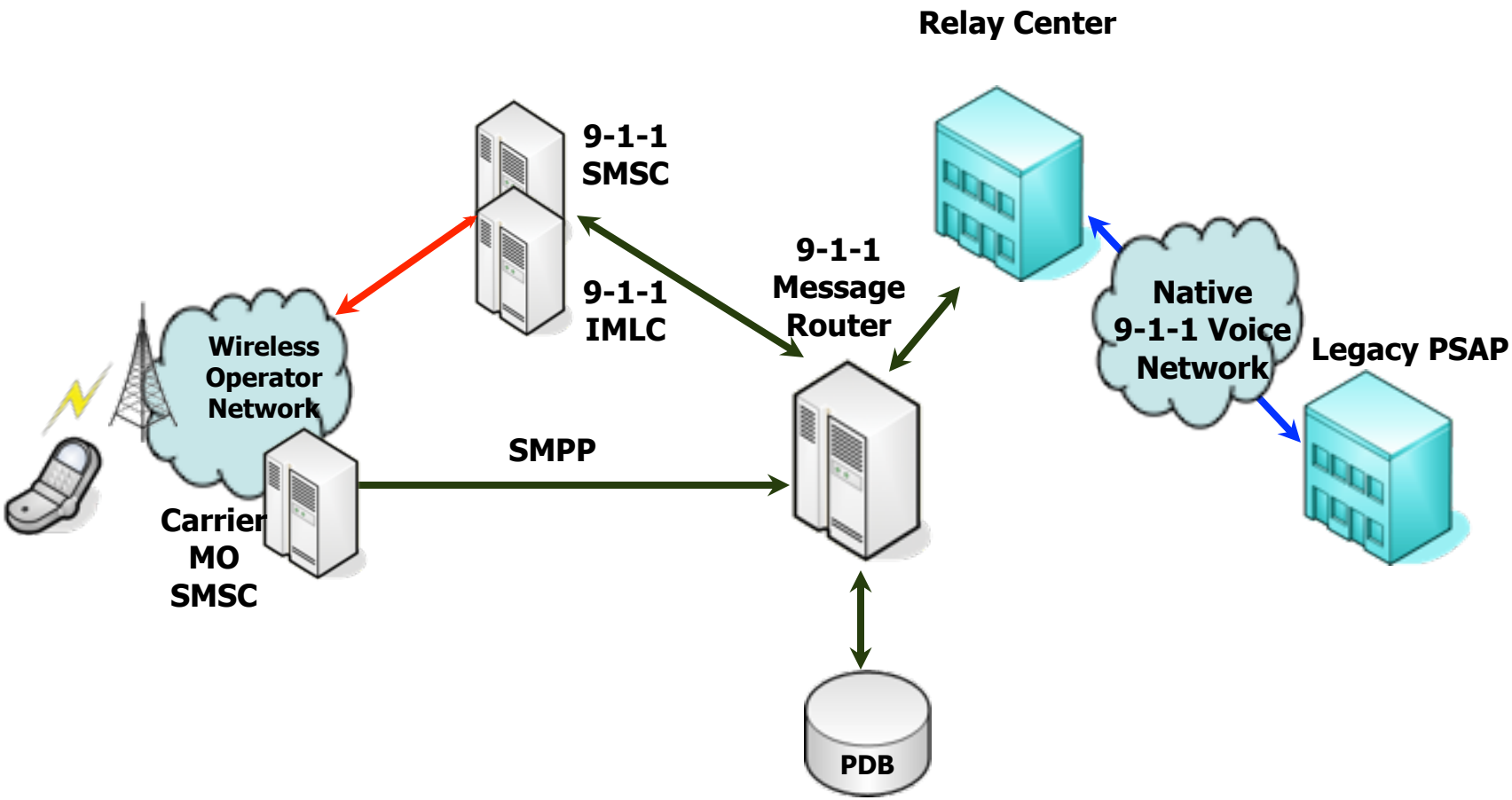
Stage 1 - Relay Center



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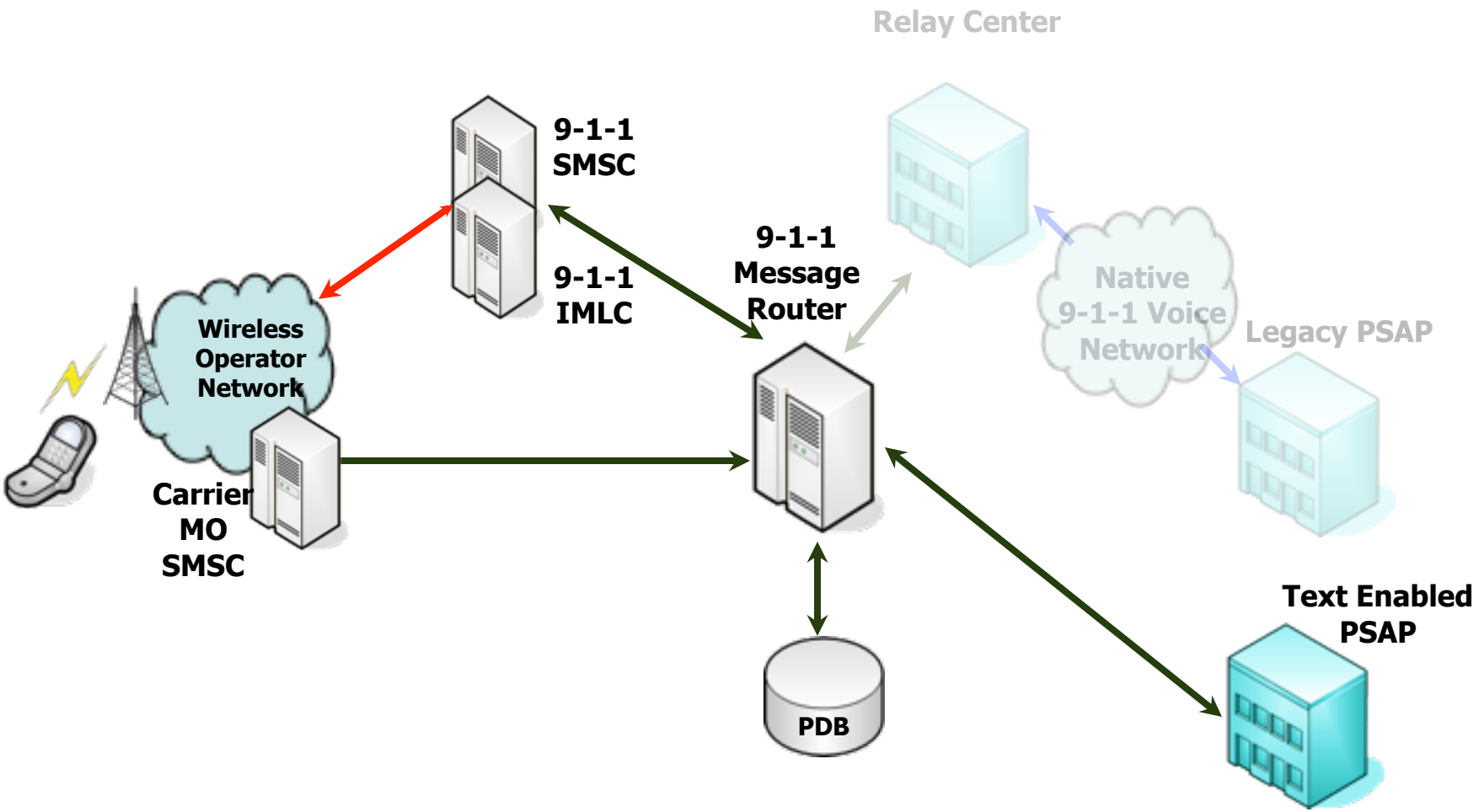
Stage 1 -Relay Center - Network Elements

- 9-1-1 SMSC - Provides reliable delivery of SMS messages
  - Carriers existing message center with new queue configured for 9-1-1 retry requirements
  - New carrier message center dedicated to 9-1-1
  - Externally hosted 9-1-1 SMSC as is done today with MPC/GMLC/PDEs for voice 9-1-1
- 9-1-1 IMLC - Cell ID idle mode location center
  - Using carriers existing commercial location center that gets cell ID of idle mode customers. Many but not all carriers have deployed one.
  - New carrier commercial IMLC dedicated to 9-1-1 or shared with commercial services.
  - Externally hosted 9-1-1 IMLC as is done today with PDEs for voice 9-1-1.
- PDB - Pre-Registration Database - hearing and speech disabled customers would register mobile number through:
  - national web site
  - wireless carrier
  - short code

Stage 2 - Text Enabled PSAPs



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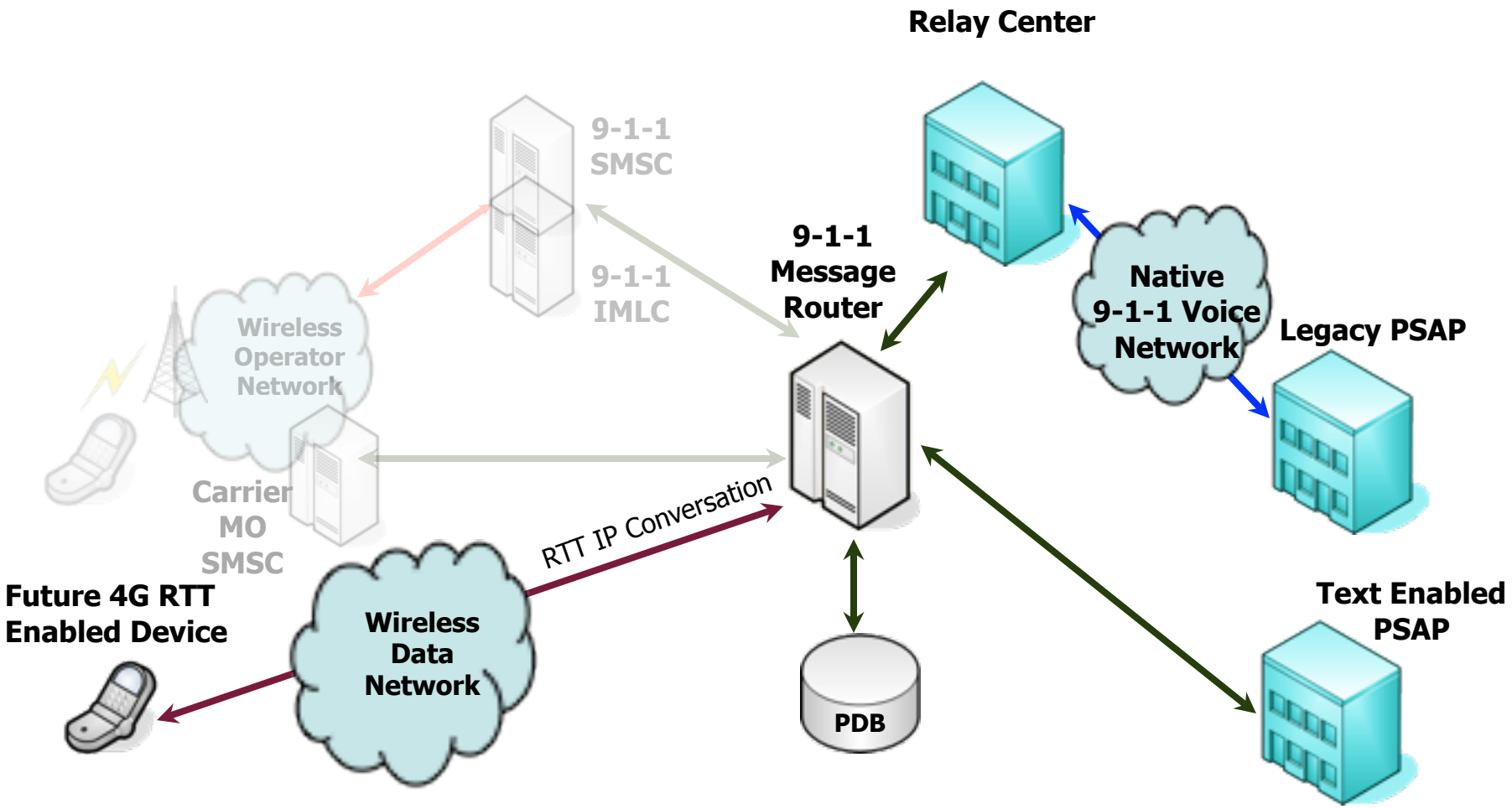
Stage 2 - Text Enabled PSAPs

- Message Router would receive 9-1-1 SMS messages
- Using the cell site location provided by the 9-1-1 IMLC, the Message Router would determine proper PSAP to route the text message
- If the PSAP is text enabled
  - The 9-1-1 text message would be directly routed to the text enabled PSAP
  - Replies would go back through the 9-1-1 message center
- If the PSAP is NOT text enabled
  - The Message Router would query the national PDB to see if the user had pre-registered.
  - If the user had pre-registered as hearing and speech disabled, the call would be directly routed to the Relay Center with the identity of the appropriate PSAP
  - If the user was not in the PDB, the user would receive a reply that indicates texting to 9-1-1 is not supported from their current location and they would need to place a voice call to 9-1-1

Stage 3 - 4G Deployments Of RTT



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Stage 3 - 4G Deployments Of RTT

- The same 9-1-1 Message Router and text enabled PSAP can be used to communicate with 4G RTT devices
- 9-1-1 Message Router is used to buffer the PSAP from changes on the carrier side and to buffer the carrier from changes on the PSAP network

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9-1-1 Message Center For Reliable SMS Delivery

- As the 4G Americas paper points out, commercial SMS delivery of messages may be delayed or delivered out of sequence. This is not a failure of SMS but is the design of "Peer to Peer" SMS messaging to deal with the delivery of billions of SMS messages
- For 9-1-1 text messaging, the 9-1-1 message center guarantees in sequence message delivery and provides very reliable delivery of emergency SMS messages to phones. This is similar to existing models used in "Machine to Machine" and "Application to Peer" SMS messaging
- Unlike "Peer to Peer" SMS, the 9-1-1 message center does not use store-and-forward functionality, which sometimes causes long message delays
- The 9-1-1 message center is integrated into the carriers network like any other message center.
- The 9-1-1 message center can be an existing, new or hosted system provided by multiple providers
- The 9-1-1 message center uses existing and currently deployed systems and standards
- The 9-1-1 message center is required to make SMS message to 9-1-1 reliable for both Relay Centers and text enable PSAPs

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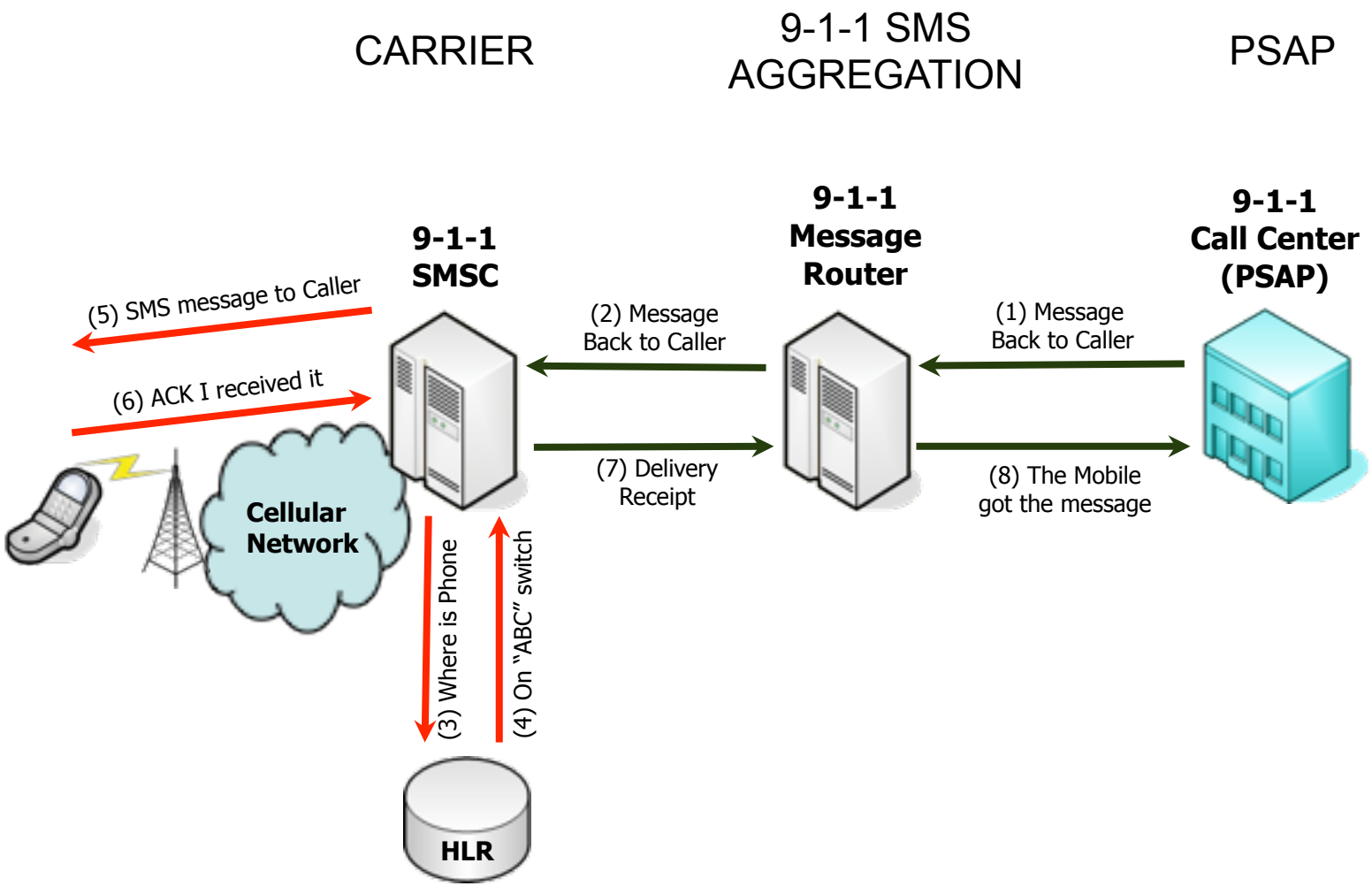

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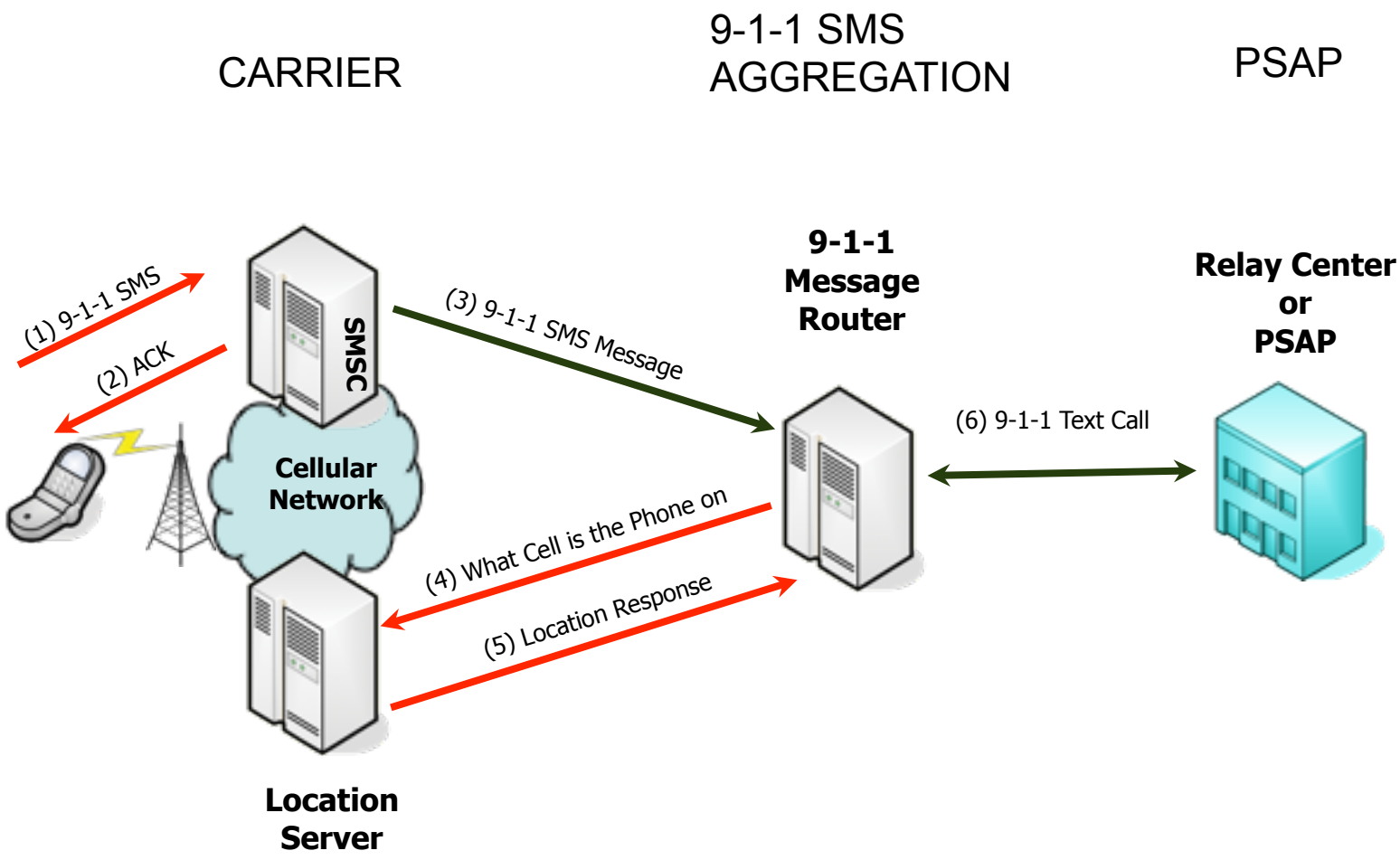
Cell ID Location For Routing Of Text Messages

- Cell ID location of idle phones, such as those texting to 9-1-1, can be determined with systems many carriers have in place today
- Is supported in GSM and CDMA systems
- Could be deployed with existing carrier systems, new Idle mode location centers or hosted Idle mode location centers
- Is necessary to automatically determine PSAP that is responsible for the request for assistance for both Relay Centers and text enabled PSAPs

Cell ID Location For Routing Of Text Messages



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Prefered Atributes Of Any Text To 9-1-1 Solution

- The solution should use the digits 9-1-1
- The solution should be open/non-proprietary and interoperate between different carriers, 9-1-1 Service providers and PSAPs
- The solution may be initially deployed with Relay or other current technologies but must provide a path towards a next generation solution (i.e NG 9-1-1, RTT, etc)
- Solutions that use the Relay Centers should route over the native 9-1-1 voice network
- Solutions that route text messages directly to PSAPs should be integrated into the PSAPs call handling systems
- The SMS solution should use commercial techniques, such as 9-1-1 Message center, to ensure reliable receipt and delivery of SMS messages
- The solution should use automatic cell location to route the message and/or determine the proper PSAP to handle the request for assistance
- Carriers who adopt a text to 9-1-1 solution will receive legal protection similar to what they receive for voice calls to 9-1-1

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What The FCC Should Do

- Encourage carriers to trial and implement text to 9-1-1 technologies
- Promote solutions that do not require carriers to retrofit legacy SMS networks with voice Phase II like location capabilities. Use technologies that are currently available on the wireless networks.
- Promote solutions that include the previously identified attributes of text to 9-1-1
- Encourage state or federal legislators to clarify and enact laws that provide entities with liability protection for Text to 9-1-1 similar to those with voice
- Provide clarity around how Relay centers could be funded